REMARKS

This amendment, submitted in response to the Office Action dated September 10, 2003, is believed to be fully responsive to each point of objection raised therein. Accordingly, favorable reconsideration is respectfully requested.

I. Preliminary Matters

The Office Action raises several informalities. Page 16 (lines 18, 21, and 22) and page 29 (line 2) have been corrected as indicated in the Appendix. Also, Applicant has corrected page 18 (line 16) to fix a minor typographical error as shown in the Appendix. Examiner states that there is insufficient antecedent basis for "said pulsed excitation light" in claims 56,57,61,62, and 63. Please note Applicant's correction of the antecedent basis.

Claims 5, 12, 13-18, 20, 26, 28, 34, 36, 42, and 50 have been withdrawn from consideration pursuant to 37 C.F.R. § 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant notes that the election was made without traverse.

II. Drawings

The Examiner objects to the Figures because the boxes are not labeled with titles in addition to the reference numerals. Applicant herewith submits annotated marked up drawings for the above mentioned figures. Accordingly, Applicant requests that the objection be withdrawn.

III. Claims

Claims 1-66 are all the claims pending in the application. Claims 5, 12, 13-18, 20, 26, 28, 34, 36, 42, and 50 have been withdrawn from consideration.

Claims 1,3,4,6,8-9,11,55-56,58, and 59 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme et al. (U.S. Patent No. 5,323,008, hereafter "Studholme") in view of Tischler et al. (U.S. Patent No. 5,679,152, hereafter "Tischler"). Claims 7,10,19,21-25,35,37-41,43,57,61, and 63 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler as applied to claims 1,3,4,8, and 11, and further in view of Okazaki (U.S. Patent No. 6,125,132, hereafter "Okazaki"). Claim 31 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler as applied to claim 7, and further in view of Okazaki and Lang et al. (U.S. Patent No. 5,337,328, hereafter "Lang"). Claims 27,29,30,32,33,44, and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler as applied to claims 1,3,4,8, and 11, and further in view of Okazaki and Lang. Claims 45-46,48,49,54,64-66 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler as applied to claims 3,4,8, and 11, and further in view of Applicant's admission of the prior art or Palcic et al. (U.S. Patent No. 5,507,287, hereafter "Palcic") or Kaneko et al. (U.S. Patent No. 6,422,994 B1, hereafter "Kaneko"). Claims 47,51,53, and 66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler as applied to claims 7,19, and 35, and further in view of Applicant's admission of the prior art or Palcic or Kaneko. Claims 52 and 66 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler and

Okazaki and Lang as applied to claim 27, and further in view of Applicant's admission of the prior art or Palcic or Kaneko.

The present invention relates to a fluorescence observing apparatus that employs an InGaN-based or a GaN-based semiconductor laser as the excitation light source. Through the use of these types of lasers, an inexpensive and high-output excitation light source can be obtained. The apparatus measures fluorescence emitted from a sample by irradiation of the excitation light and then uses this measurement to provide information for diagnosis.

Studholme teaches a fluorescence detection system to be used in conjunction with fluorescable dyes in order to improve the signal detection (see Studholme, col. 12, ln.25-50). Studholme advocates selecting a dye with a long excitation wavelength in the red and infrared wavelengths to achieve a higher sensitivity (*see* col.2, ln.28-43, Studholme). Typical wavelengths include 670 nm, 685 nm, 720 nm, 750 nm, and 780 nm (*see* col.5, ln. 44-46, Studholme). To the extent that short wavelengths are used, they provide a reduced sensitivity (on the order of 1 magnitude of difference) to fluorescence, thus suggesting that long wavelengths should be used with the contemplated dyes.

According to Studholme, the laser diode used as the excitation light source produces poor sensitivity when used to emit light which has a wavelength belonging to a short wavelength region from ultraviolet rays to visible light. Studholme is unable to achieve adequate sensitivity without using laser diodes available in discrete output wavelengths compatible with fluorescent dyes at the red or longer wavelength (*see* col.5, ln.40-50, Studholme).

The Examiner correctly concedes Studholme fails to refer to the use of a GaN based semiconductor laser. However, the Examiner's citation of Tischler does not support the rejection. "When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references." In re Rouffet, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). Here, the Examiner's proffered motivation to make the combination is not supportable.

An important factor in selecting an appropriate laser source is the excitation and emission wavelengths characteristic of the dye being used. There are certain types of LEDs that are not likely to excite specific fluorescent dyes. Applicant argues that the GaN based semiconductor is not compatible with the fluorescent dyes taught in Studholme. For instance, Tischler only describes emissions in the blue range, which is quite outside the range contemplated to excite the fluorophores of Studholme.

A GaN laser emitting short wavelengths in combination with dyes excitable by red and infrared wavelengths of Studholme would lead to undermining the principle operation of the primary reference.

In this connection, the Examiner's rationale to combine the references is also improper. The rationale assumes use of blue wavelengths and is contemplated by both references. However, Studholme favors longer wavelengths to improve sensitivity. Therefore, the Examiner's rationale is not supported. Further, it would not have been obvious to one of ordinary skill in the art to combine Studholme and Tischler. The Examiner should withdraw the 35 U.S.C. § 103(a) rejection of claims 1,3,4,6,8-9,11,55-56,58, and 59.

Applicant respectfully traverses 103(a) rejection of claims 7,10,19,21-25,27,29,30-35,37-41,43,44,52,57,61-63, and 66 under Studholme in view of Tischler, and further in view of Okazaki by arguing common ownership. Under 35 U.S.C. § 103(c), if the subject matter which would otherwise be prior art to the claimed invention and the claimed invention are commonly owned at the time the claimed invention was made, then the subject matter that would have been prior art must be disqualified. MPEP 706.02(l)(2). Applicant respectfully requests the Examiner to note the enclosed assignment information in response to the Office Action rejection over all combinations over the U.S. Okazaki patent.

Applicants respectfully submit that, the Okazaki reference is commonly assigned to Fuji Photo Film Co., Ltd. Therefore, Applicants submit that, by virtue of its assignment to Fuji Photo Film Co., Ltd. on April 28, 1998 at Reel No. 009140, Frame No. 0169, the Okazaki reference is disqualified as prior art under 35 U.S.C. § 103(c) and should be removed. Thus, the rejections of claims 7,10,19,21-25,27,29,30-35,37-41,43,44,52,57,61-63, and 66 under 35 U.S.C. § 103(a) should be withdrawn.

The Examiner argues that it is obvious to one skilled in the art to have further modified Studholme so that the laser used for the light source is as taught by Okazaki. However, in accordance with the discussion above, the GaN based laser used in the claimed invention and in Okazaki would not be compatible with the fluorescent dyes used to emit fluorescence from the sample as disclosed in Studholme. Therefore, claims 7,10,19,21-25,35,37-41,43,57,61, and 63 should not be rejected under 35 U.S.C. § 103(a).

Claims 7,10,19,21-25,35,37-41,43,57,61,63 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme, Tischler, and Okazaki. However, since these claims depend, either directly or indirectly, upon claim 1 and Okazaki fails to cure the deficient teachings of Studholme and Tischler, Applicant believes that such claims are patentable at least by virtue of their dependency.

"A prior art reference is analogous if the reference is in the field of the applicant's endeavor or, if not, the reference is reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Here, Okazaki teaches a light source for recording a color image on a color photosensitive material (*see* col.1, ln.25-30, Okazaki). This bears no relationship to the other references and also is not concerned with similar problems of the other references cited. Therefore, the art is non-analogous. With further regards to claims 8-10, the Examiner has failed to indicate how the cited references teach the various power requirements.

Claims 27,29,30,31,32,33,44, and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Studholme in view of Tischler in view of Okazaki and Lang. These claims depend upon claim 1 but Okazaki and Lang fail to make up for the deficiencies of Studholme and Tischler so such claims are patentable at least by virtue of their dependency. Lang teaches semiconductor lasers with multiple gratings within the resonant cavity so that a higher output power can be achieved (*see* col.1, ln.20-40, Lang).

Further, Lang advocates a broad area semiconductor laser capable of generating a coherent single wavelength and which has an angled grating that directs laser light to produce a

coherent beam having a specific wavelength and a single spatial mode (*see* col.2, ln.45-65, Lang). Conversely, Studholme teaches the use of tunable laser diodes such as quantum well diodes that are able to tune the output wavelengths (see col.5, ln. 55-60, Studholme). It is clear that Lang and Studholme teach the use of different types of diodes to achieve different end results. Therefore, it would not be obvious to one of even ordinary skill in the art to combine these references.

Claims 45,46,48,49,54,64-66 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Studholme in view of Tischler in of the admitted prior art, and further view of Palcic or Kaneko. Kaneko teaches the use of an endoscope to irradiate an excitation light onto an area of biological tissue (*see* col.1, ln.5-15, Kaneko). Studholme teaches combining relatively high power excitation pulses with high repetition rates so that quicker and more accurate fluorescent measurements can be obtained. By contrast, Palcic and Kaneko teach the use of an endoscope to provide the light source so there must be both an excitation light source and a visible light source. This additional visible light component possibly causes detection of unwanted background radiation which reduces the image quality and accuracy of detection. Therefore, the combination of Palcic or Kaneko with Studholme is not supported.

With further regard to Palcic, the reference relates to the detection of autofluorescence, and this is incompatible with the fluorescent tags used in Studholme. As a related matter, the disclosed wavelengths in Palcic are also incompatible with the primary references. The remaining rejections of claims 47,51-53, and 66 are traversed for similar reasons.

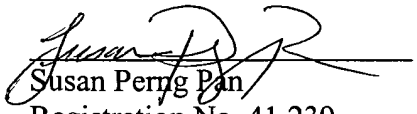
Applicant further submits that independent claim 1 is generic to all the pending claims. Because claim 1 is patentable for the reasons set forth above, the remaining non-elected claims should be rejoined in the application.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Patent Assignment Abstract of Title

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Total Assignments: 1

Patent #: 6125132 **Issue Dt:** 09/26/2000 **Application #:** 09066910 **Filing Dt:** 04/28/1998

Inventor: YOJI OKAZAKI

Title: LASER DIODE PUMPED SOLID STATE LASER, FIBER LASER AND FIBER AMPLIFIER

Assignment: 1

Reel/Frame: 009140/0169 **Recorded:** 04/28/1998 **Pages:** 2

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

Assignor: OKAZAKI, YOJI **Exec Dt:** 04/13/1998

Assignee: FUJI PHOTO FILM CO., LTD.
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KANAGAWA-KEN, JAPAN

Correspondent: SUGHRUE, MION, ZINN, MACPEAK & SEAS
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FIG. 1

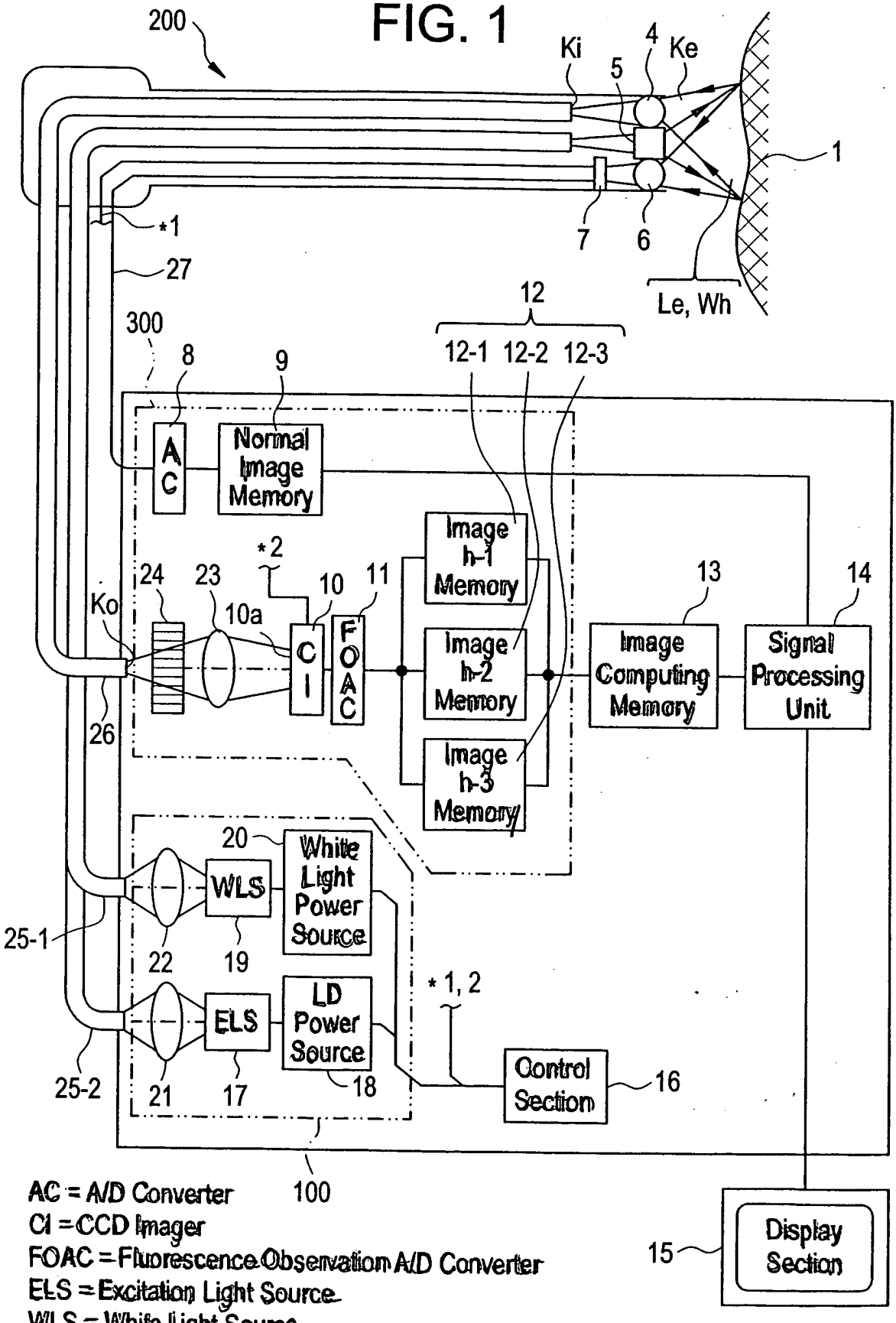


FIG. 2

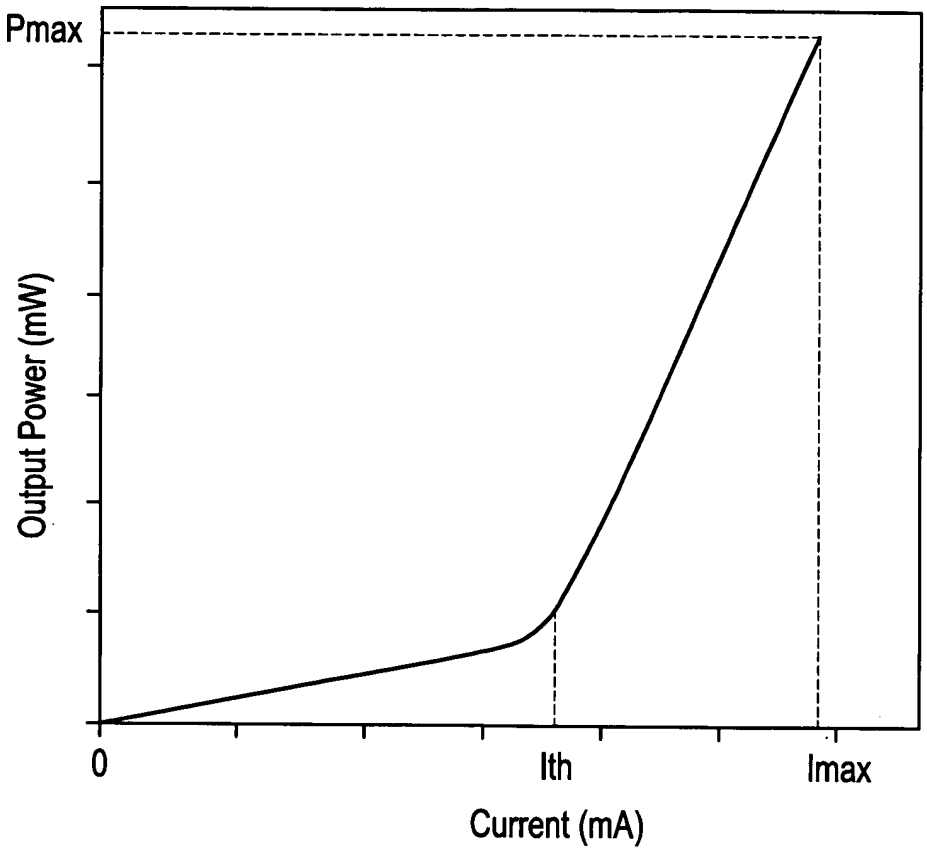


FIG. 3

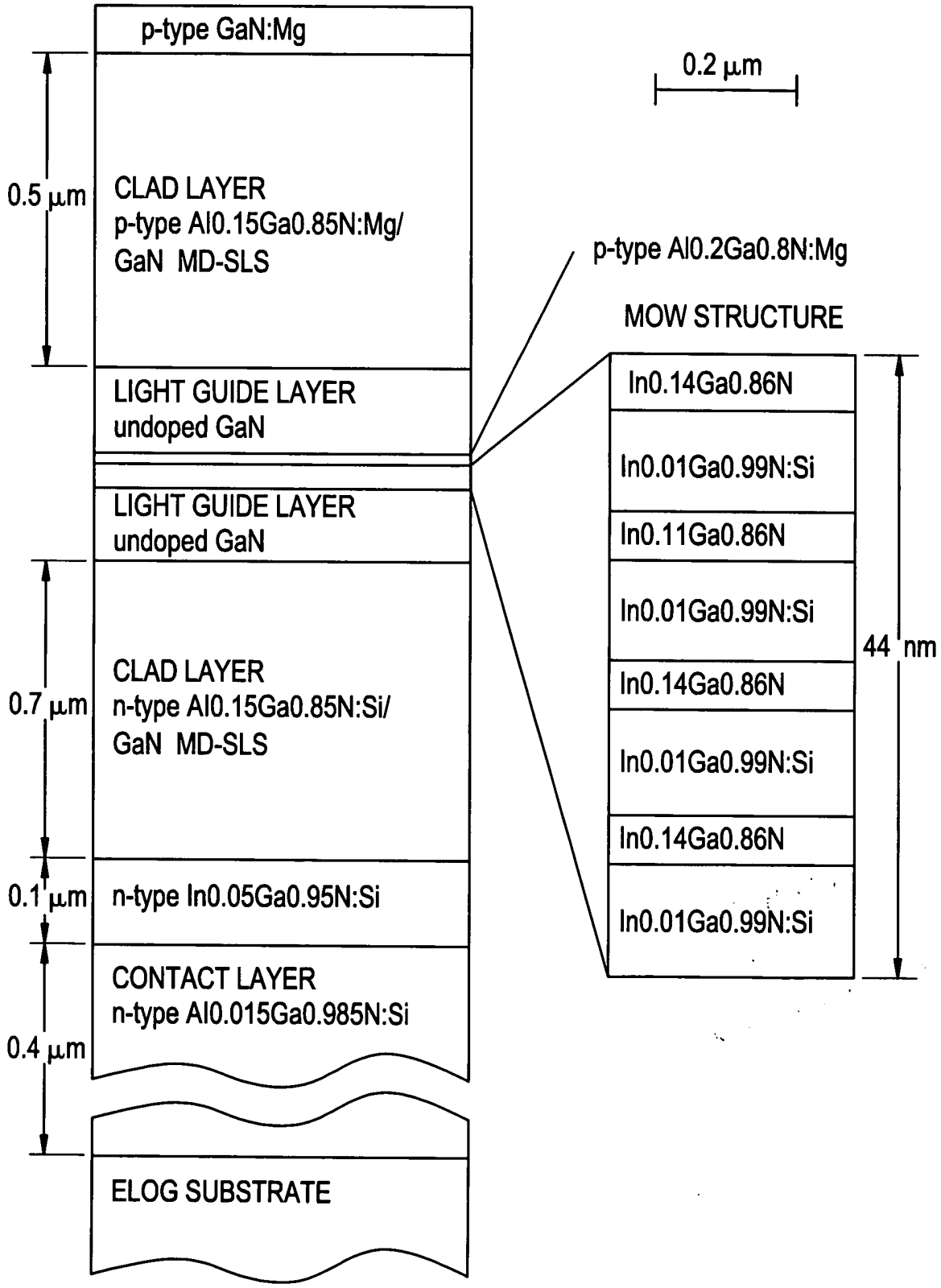


FIG. 4

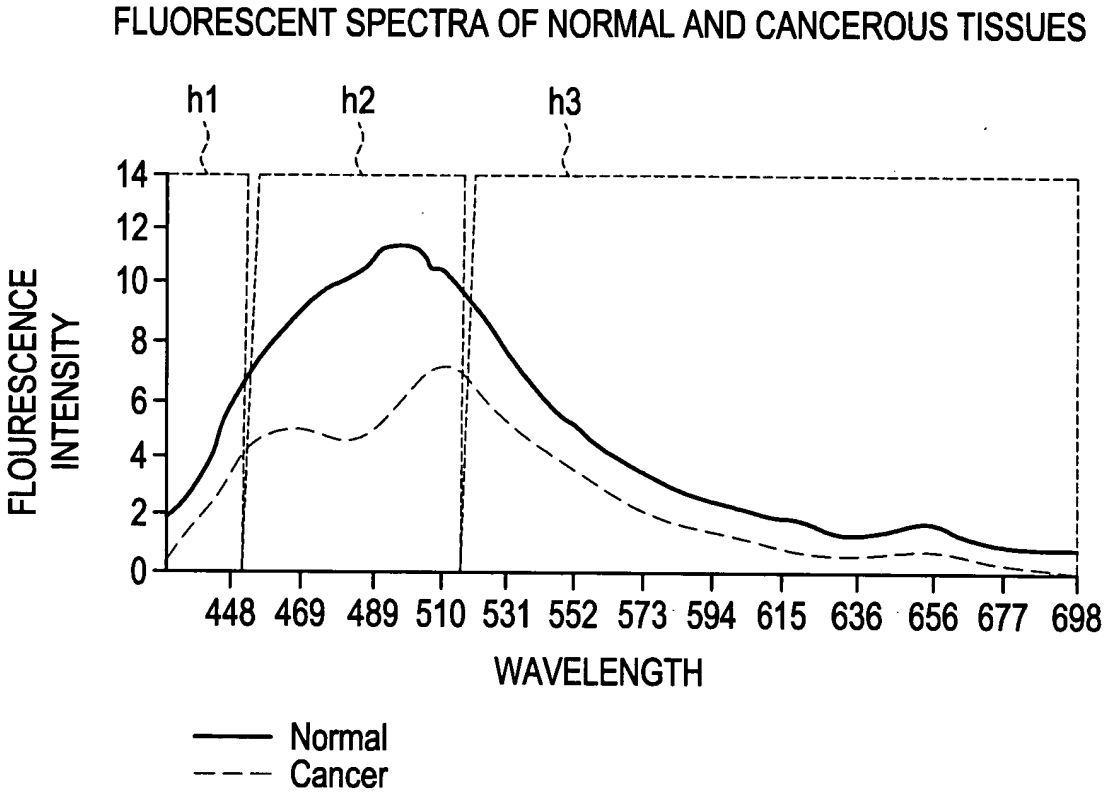


FIG. 5

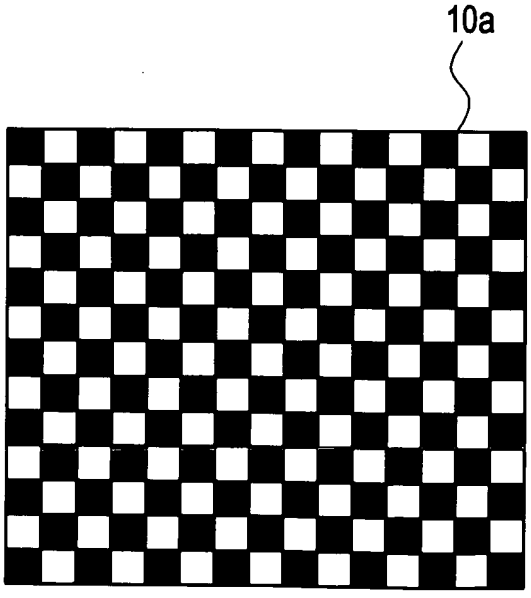


FIG. 6

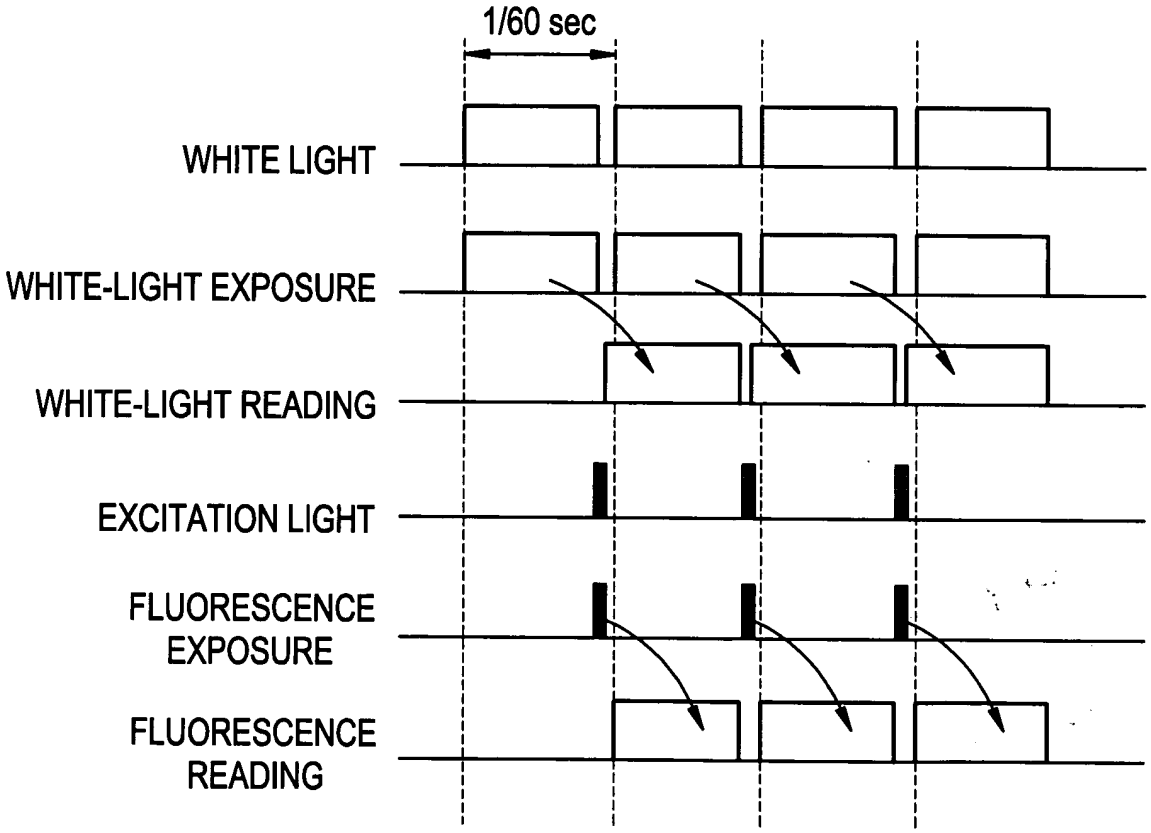


FIG. 7A

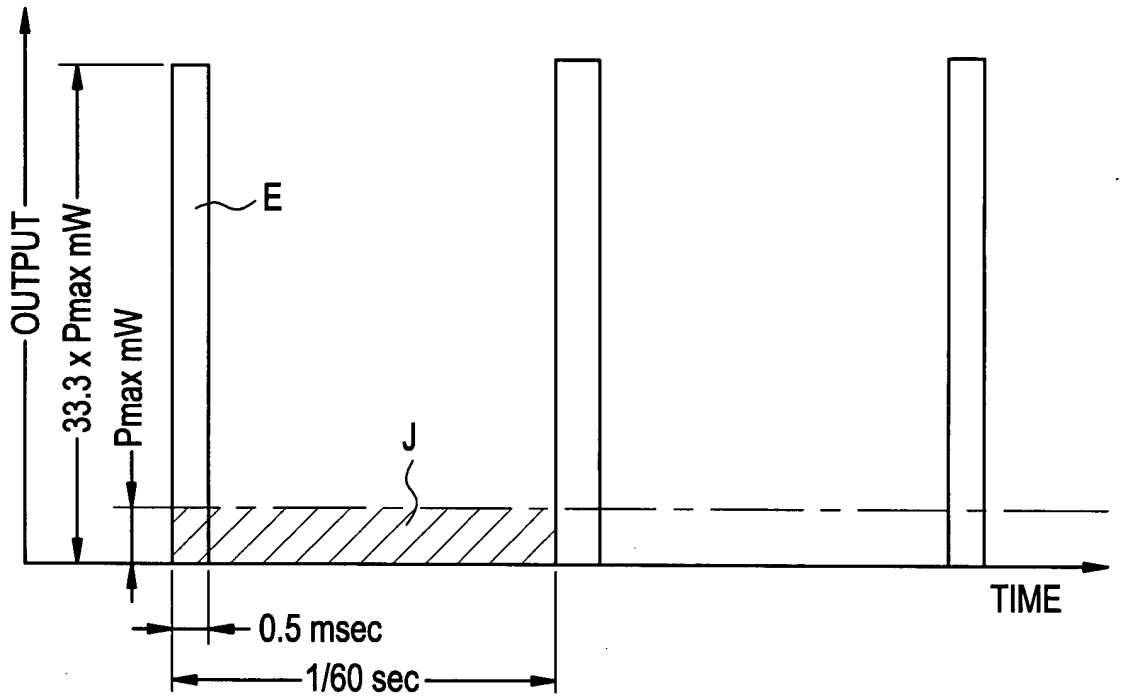


FIG. 7B

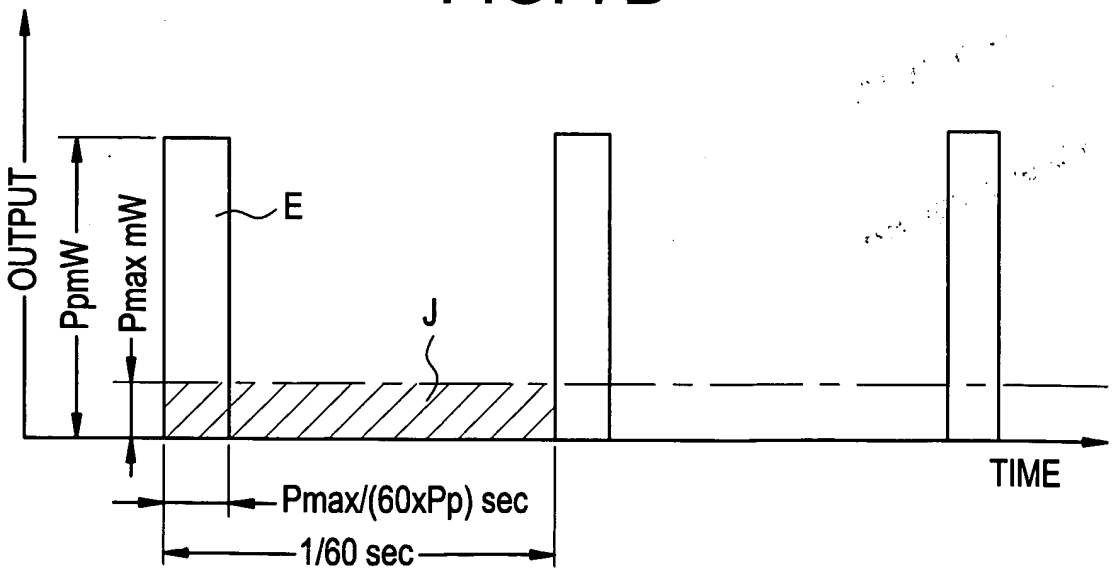


FIG. 8

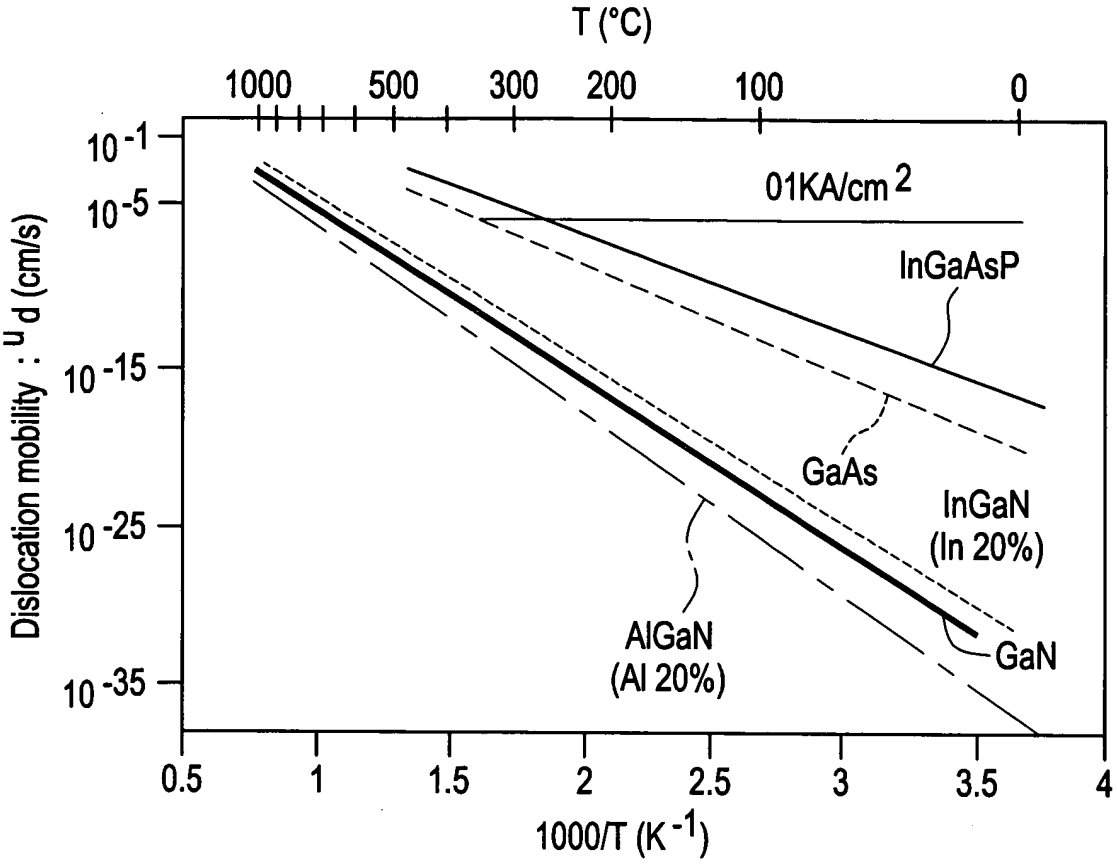


FIG. 9

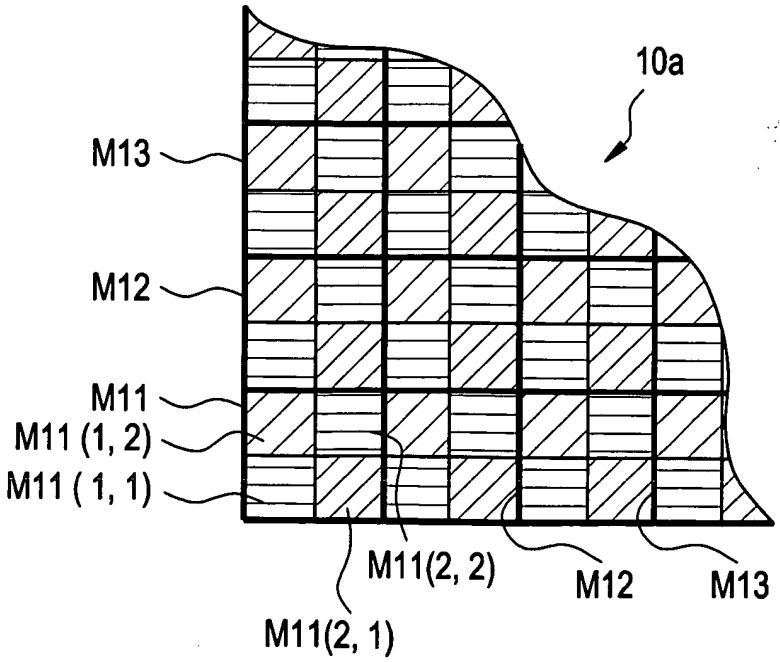


FIG. 10

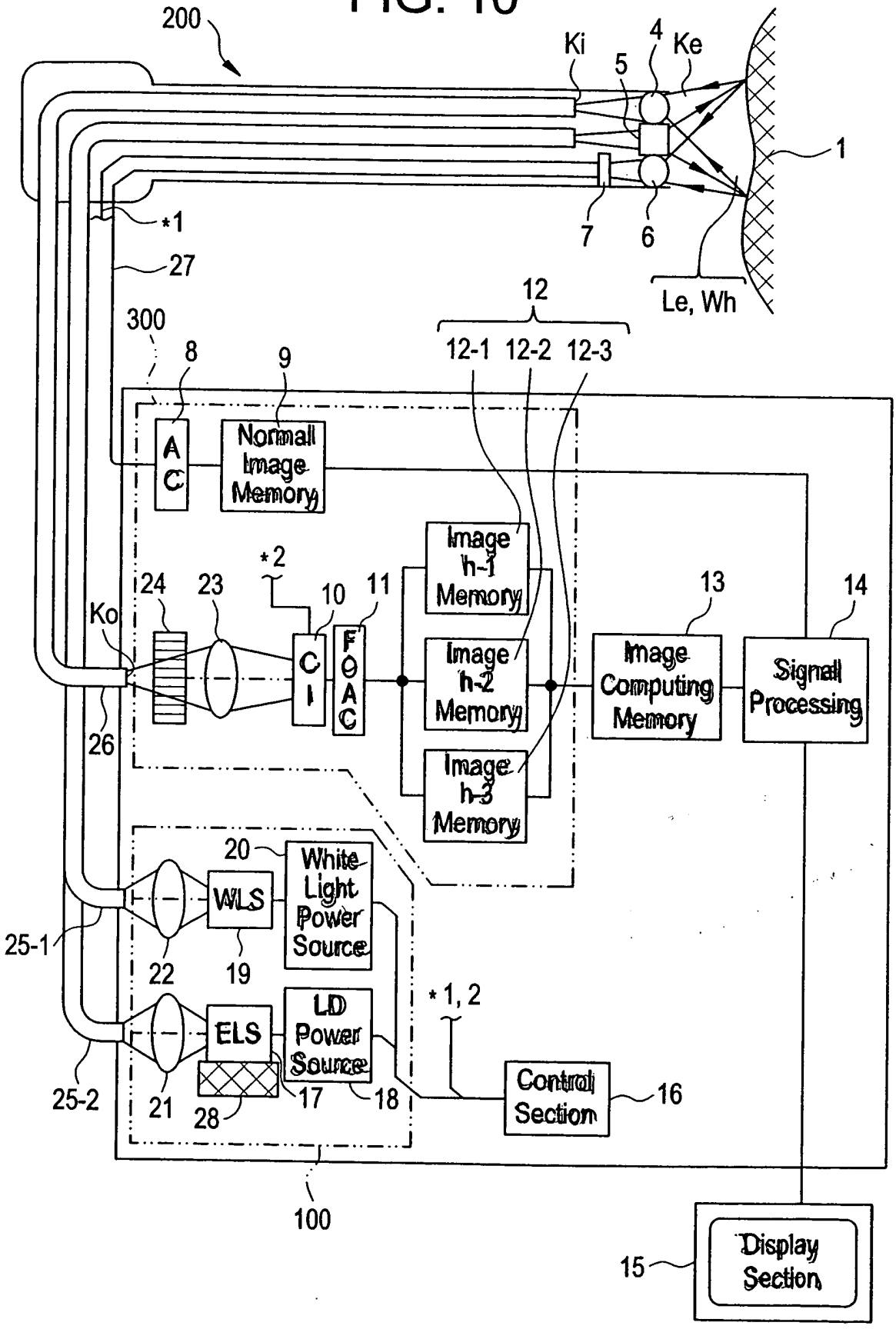


FIG. 11

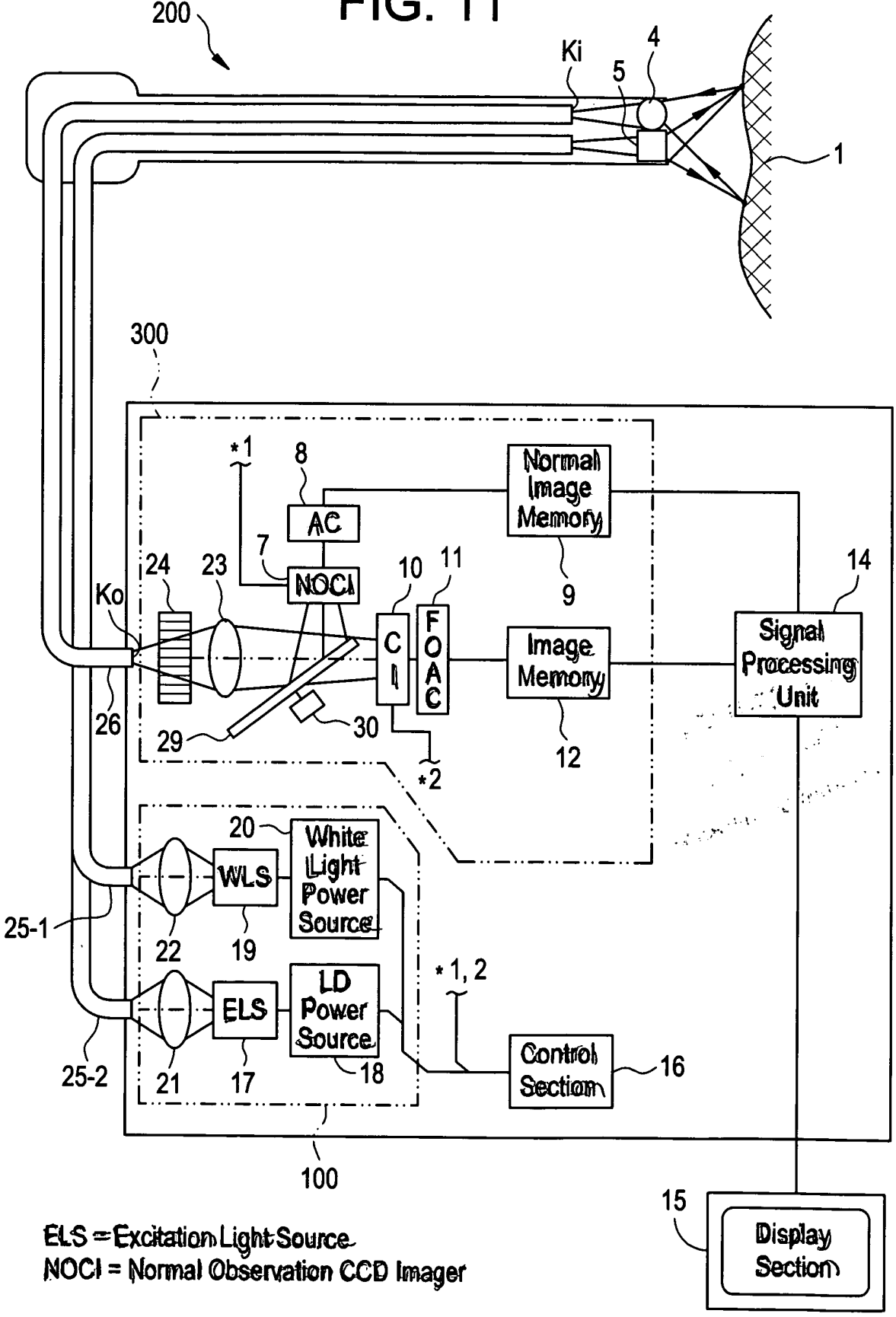


FIG. 12

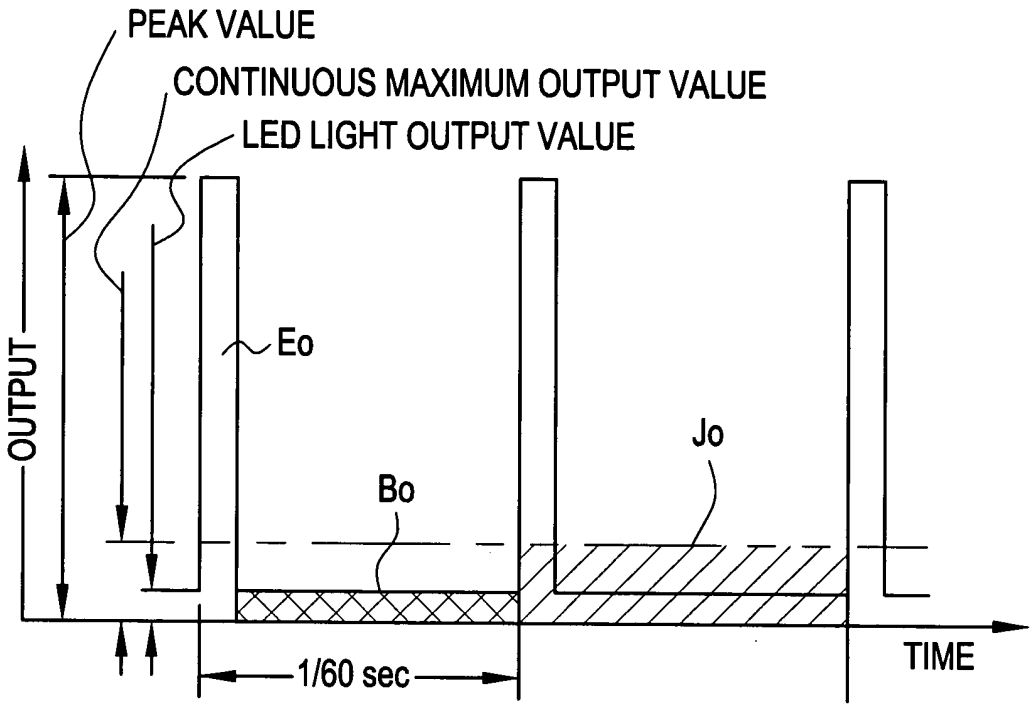


FIG. 13

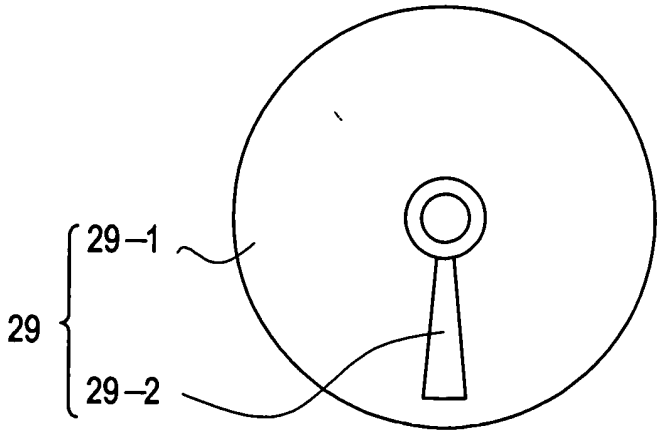


FIG. 14

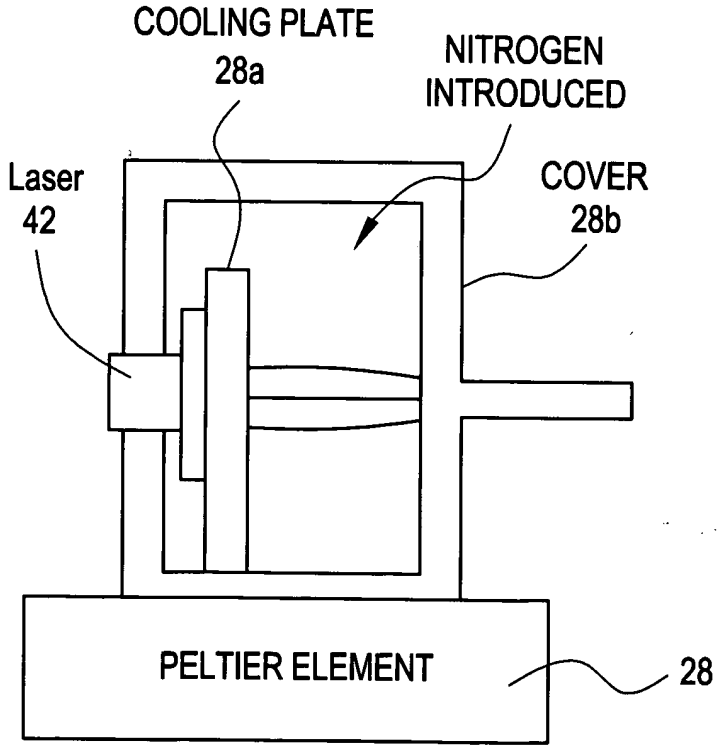


FIG. 15

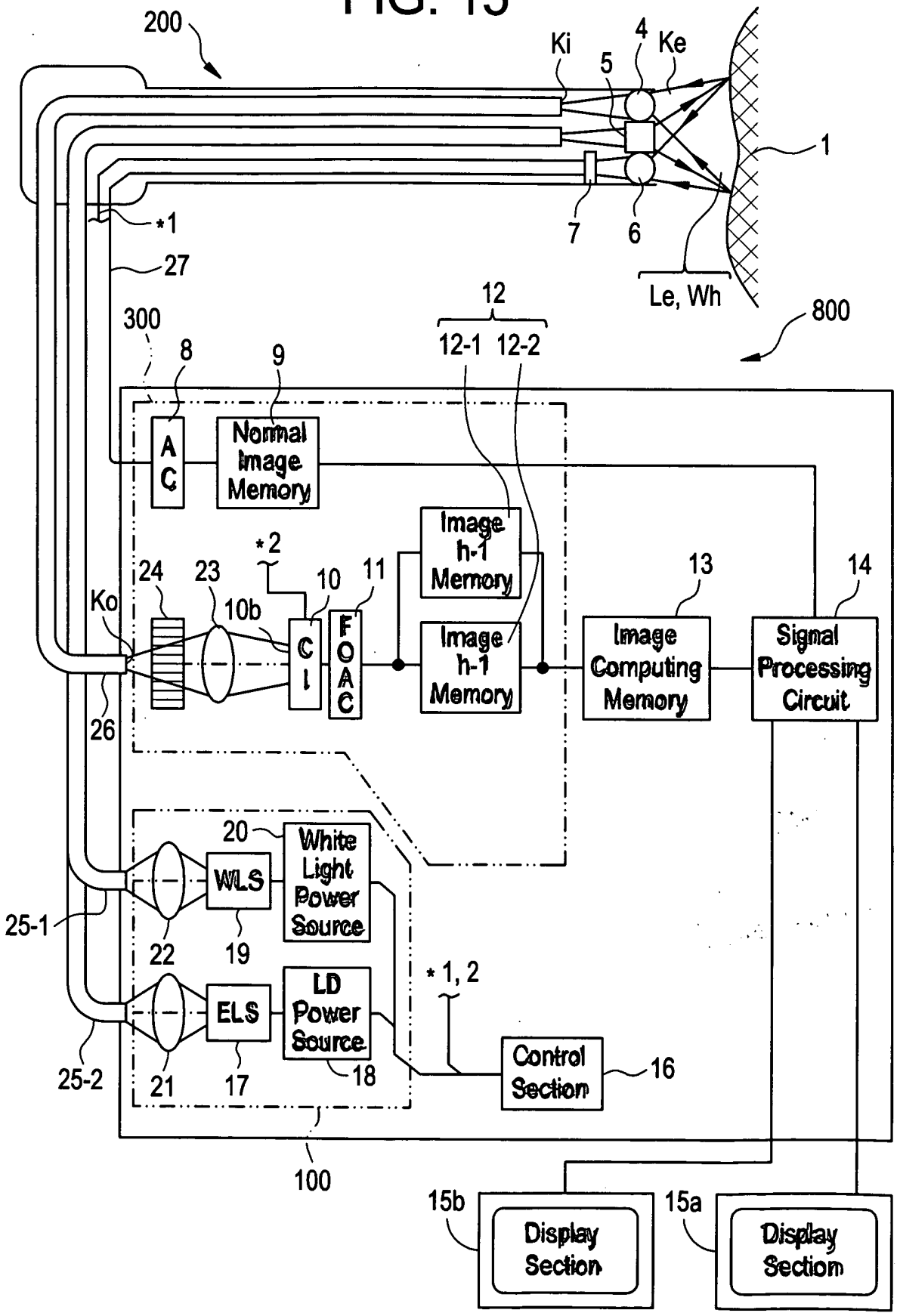


FIG. 16

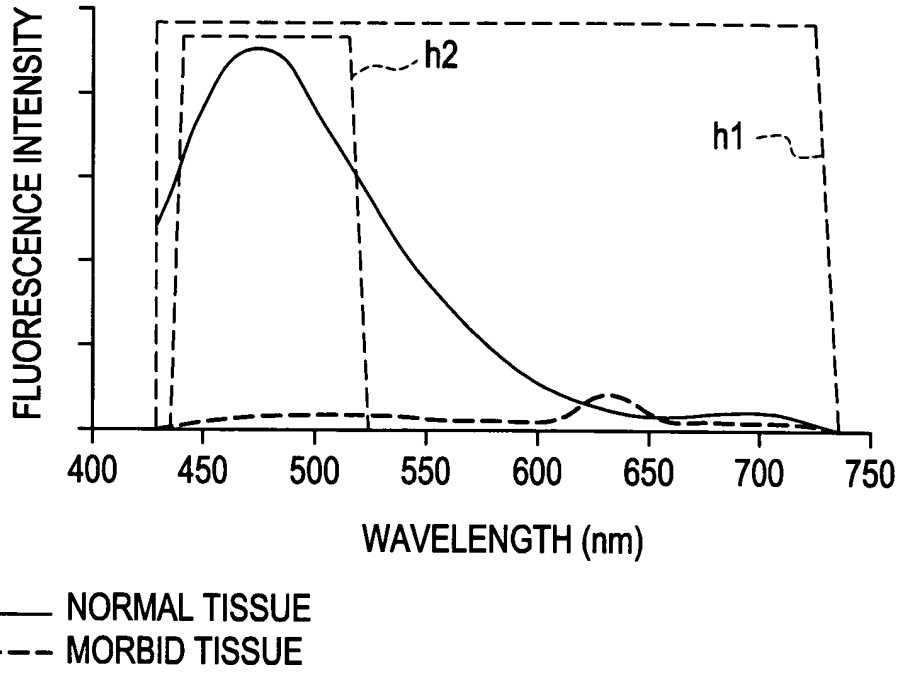


FIG. 17

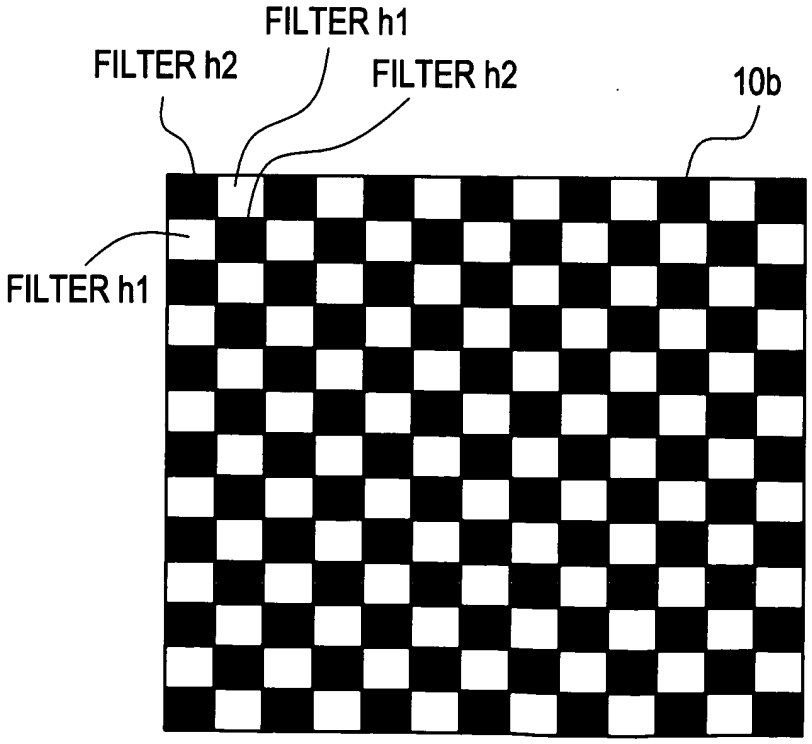


FIG. 18

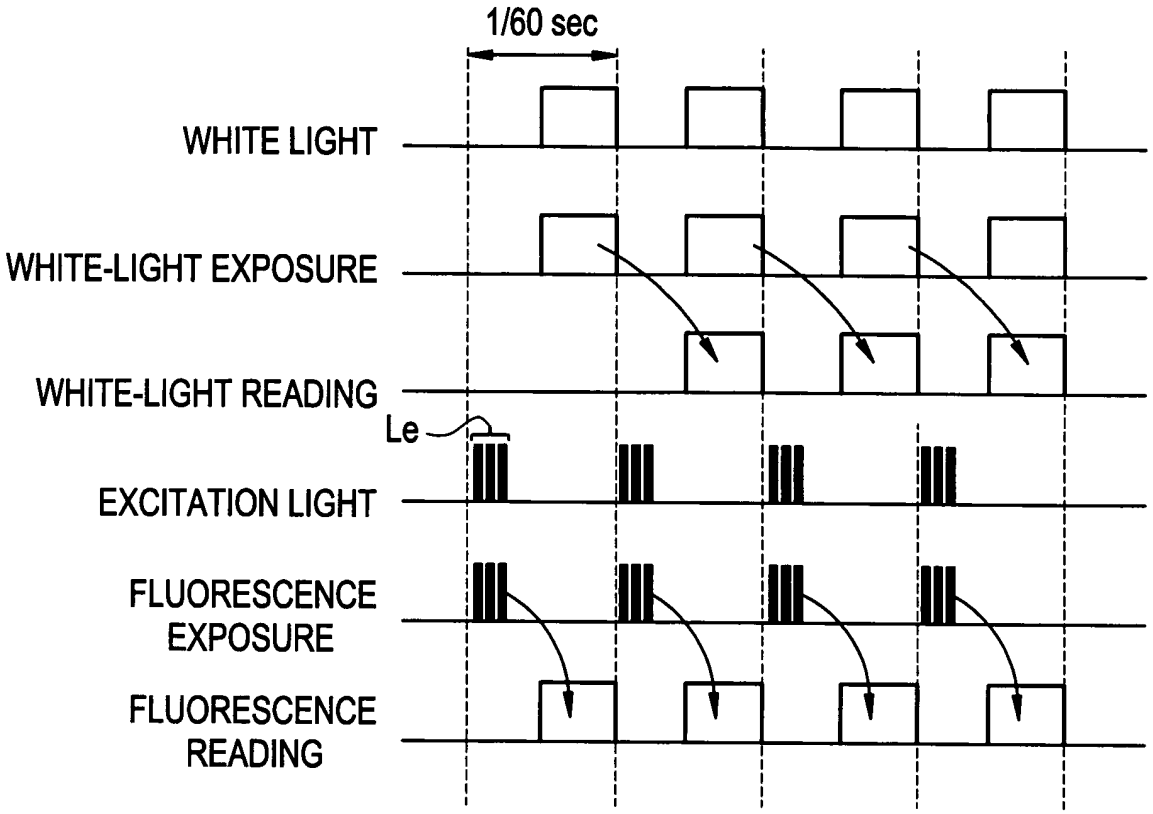


FIG. 19

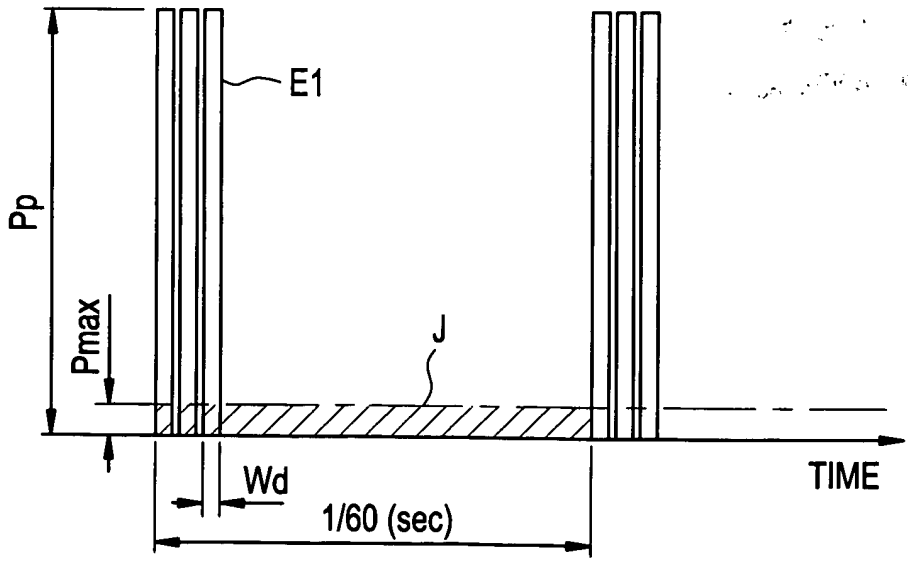


FIG. 20

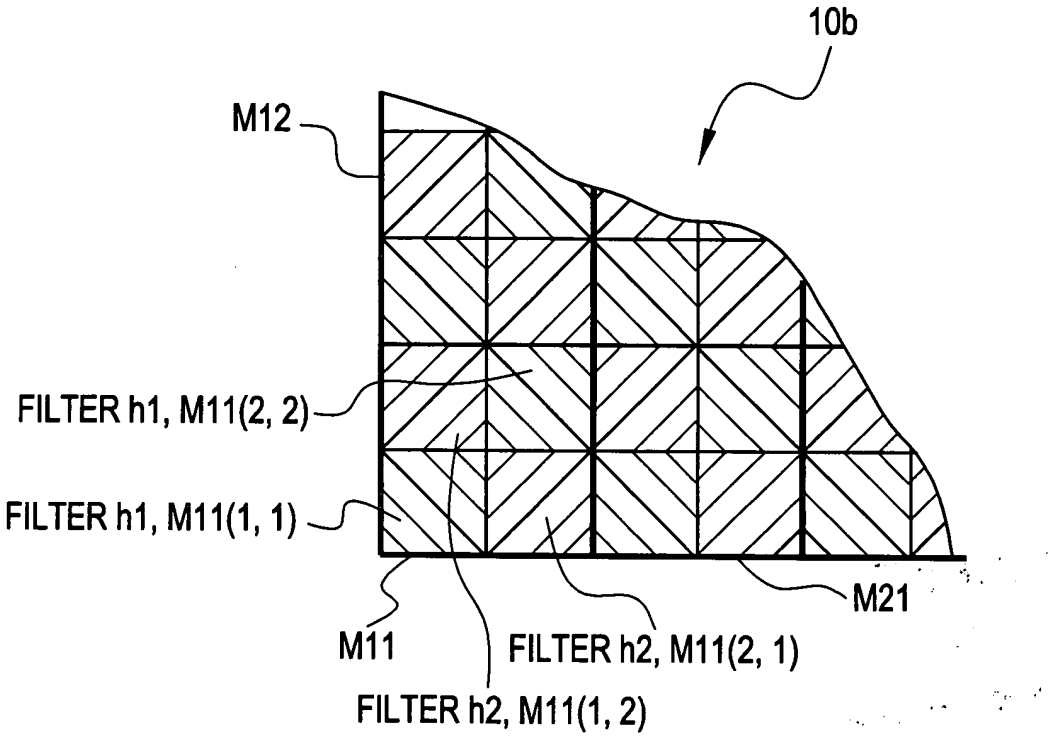


FIG. 21

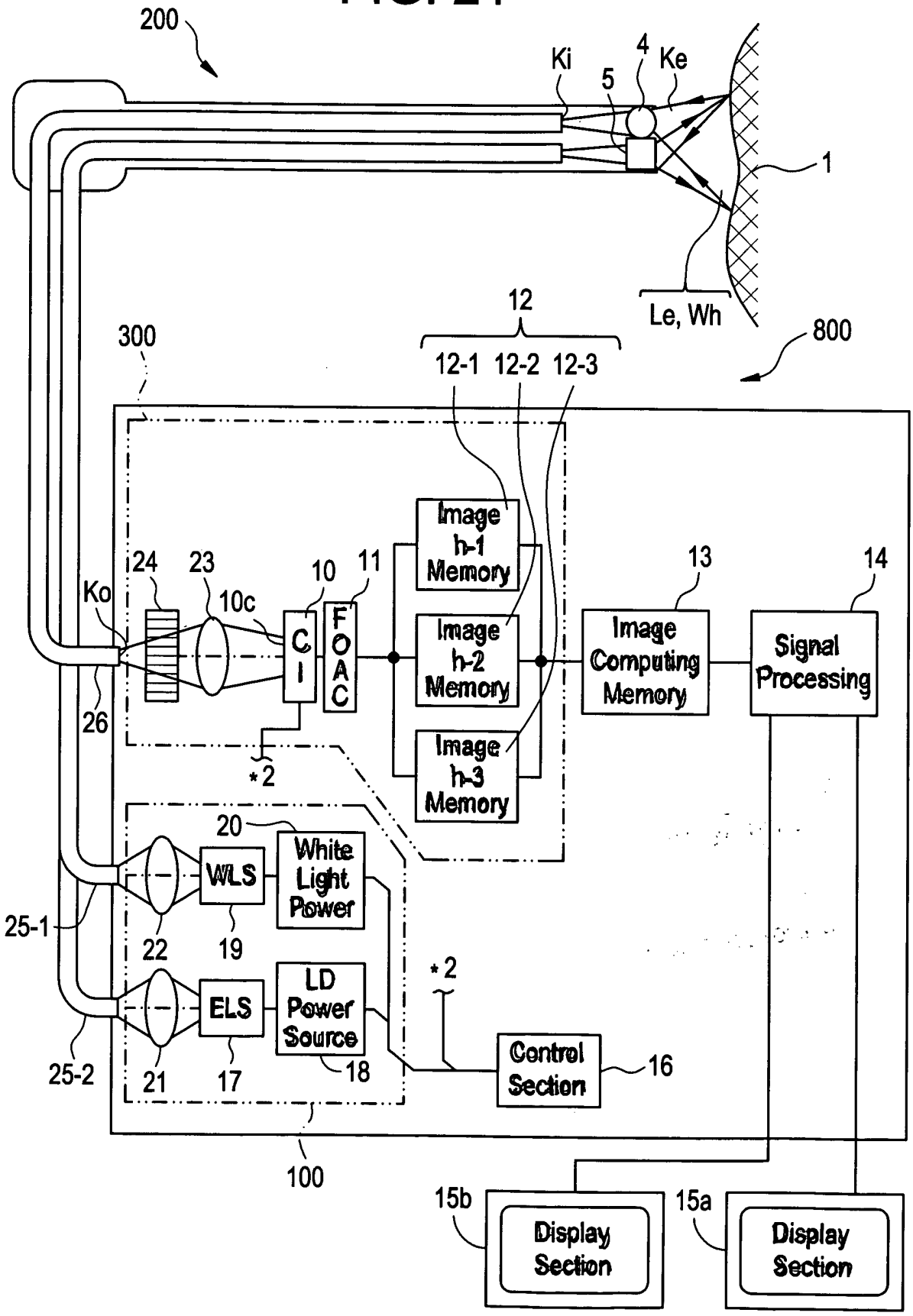


FIG. 22

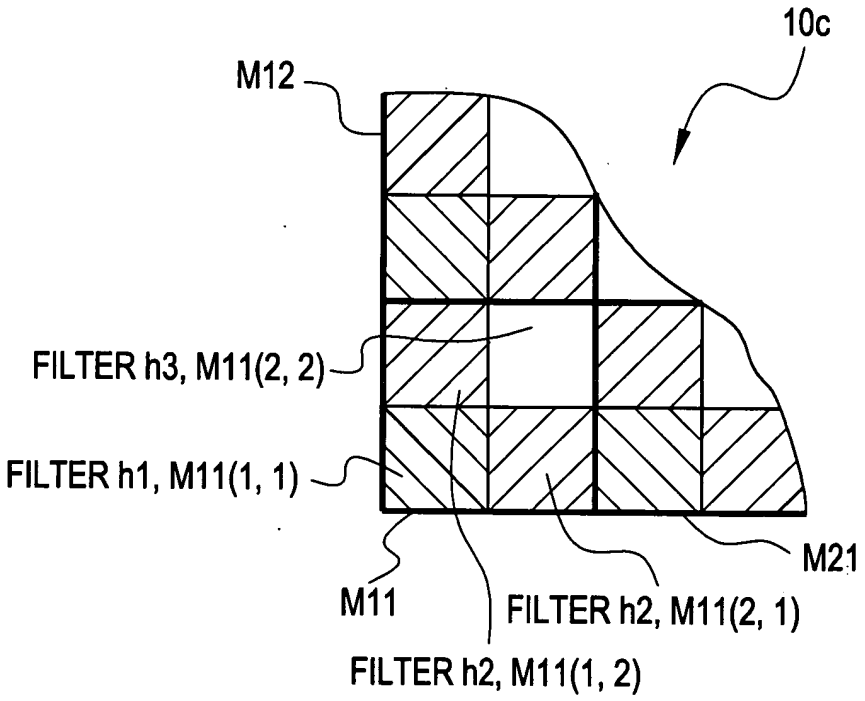


FIG. 23

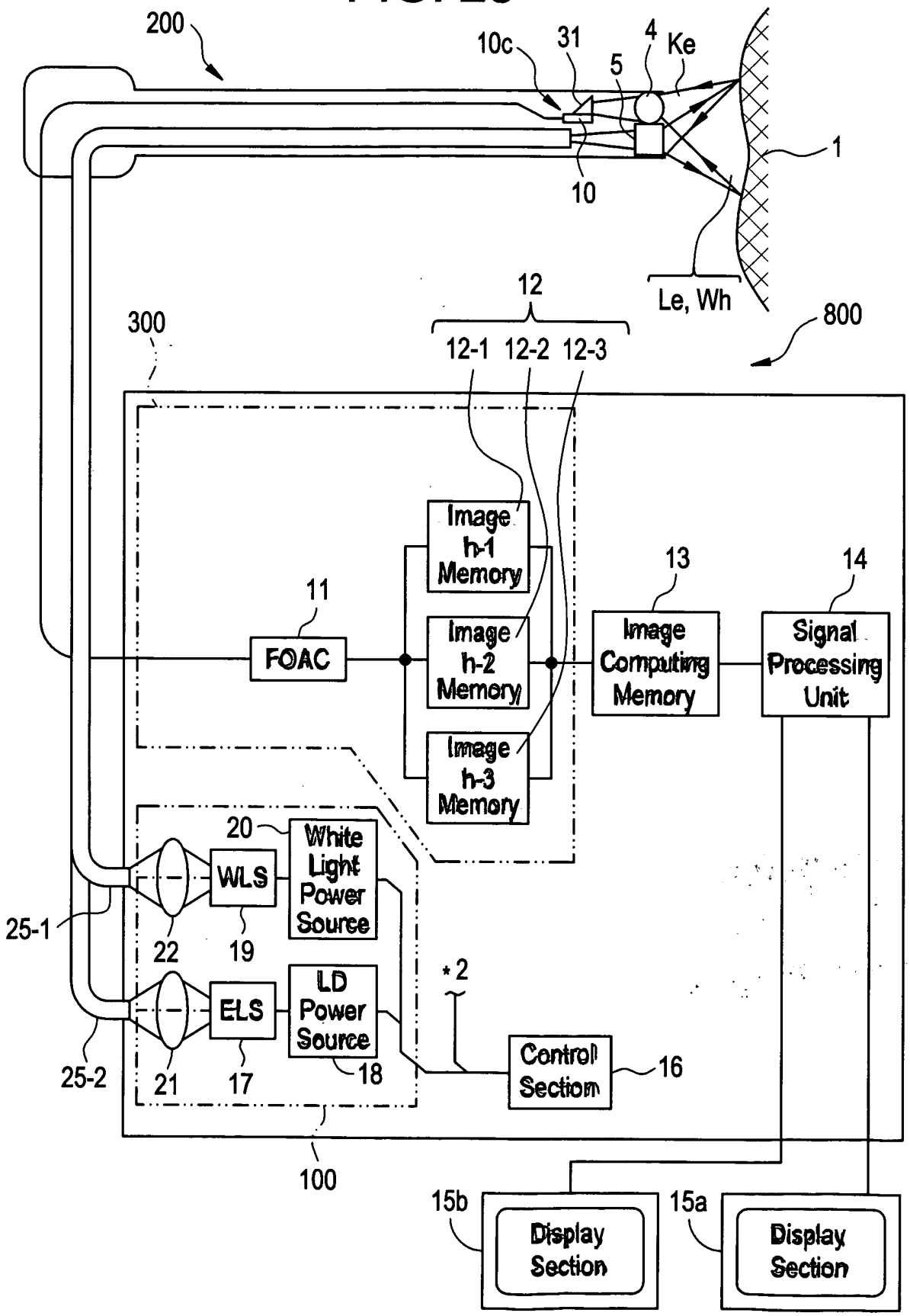


FIG. 24

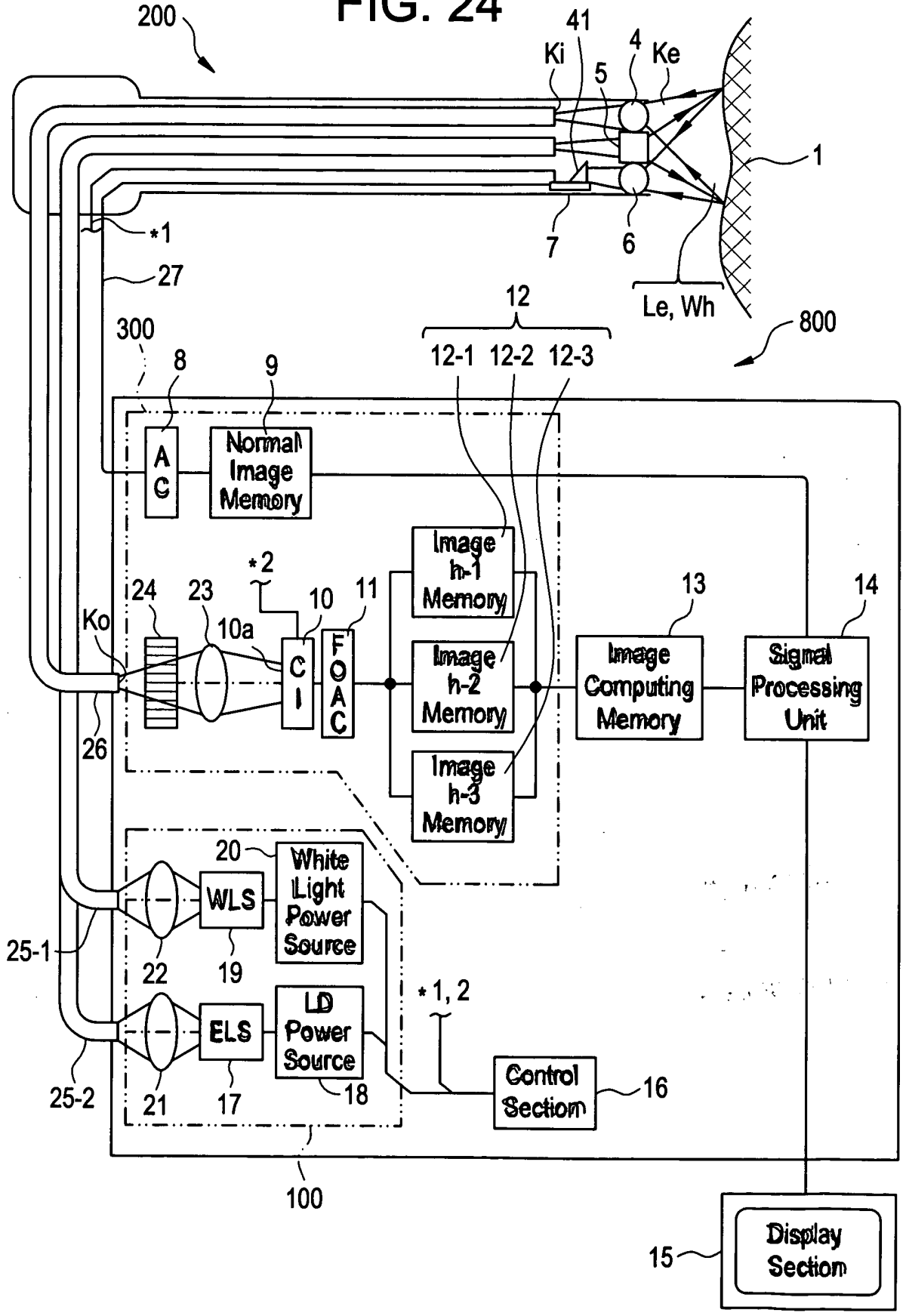


FIG. 25

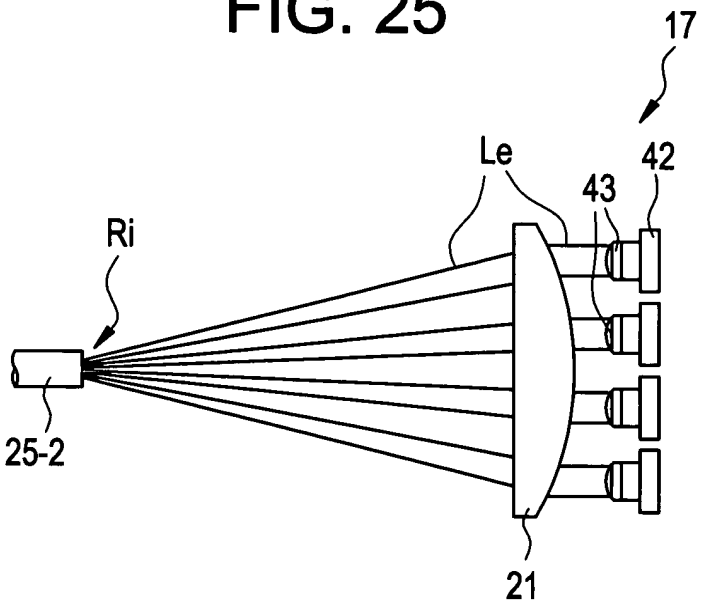


FIG. 26

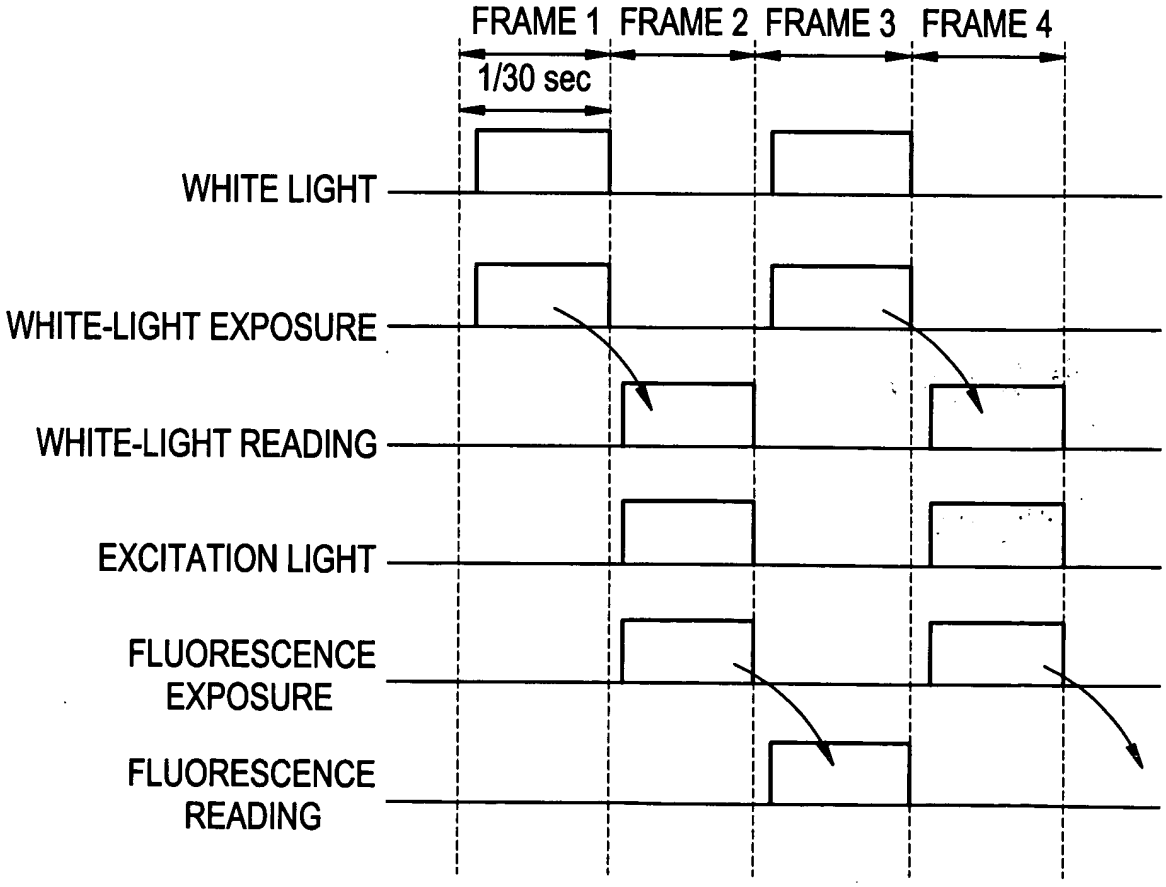


FIG. 27

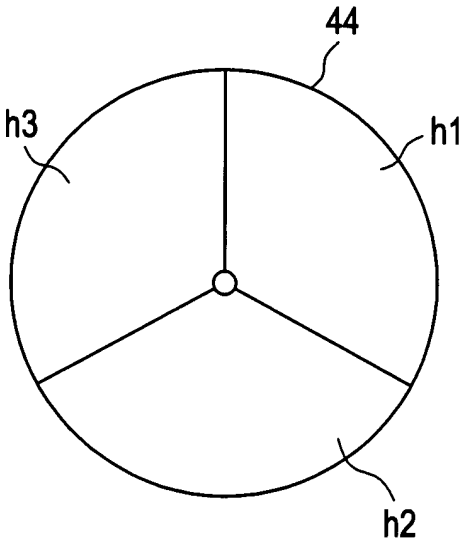


FIG. 28

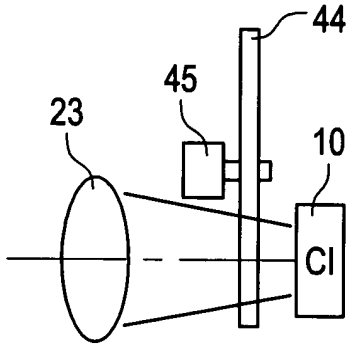
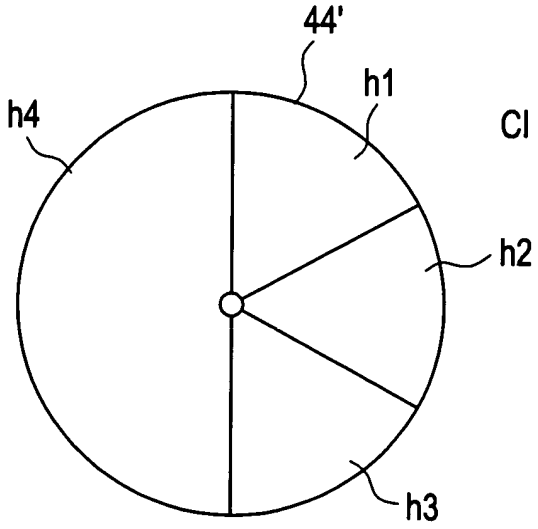


FIG. 29



CI = CCD IMAGER

FIG. 30

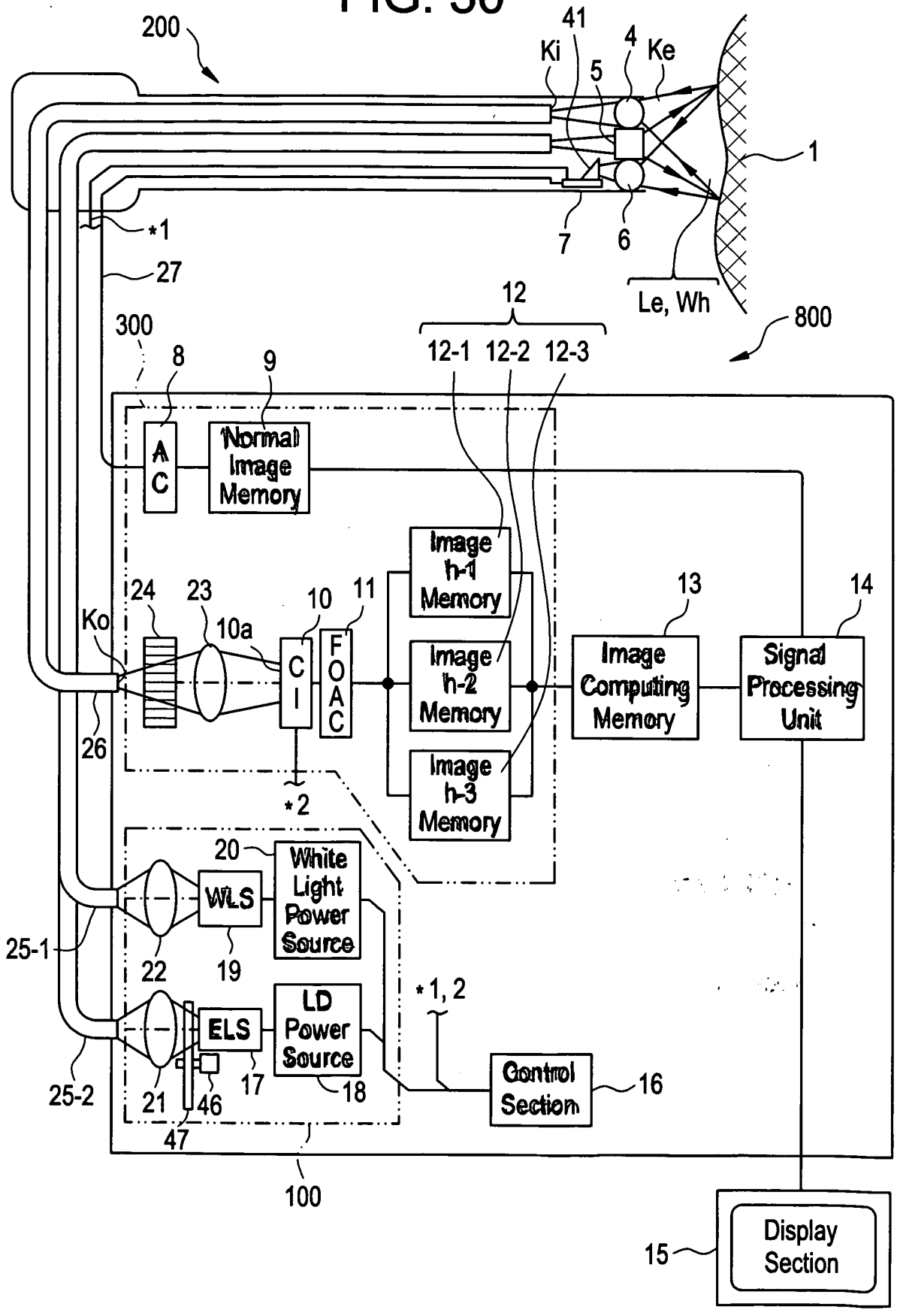


FIG. 31

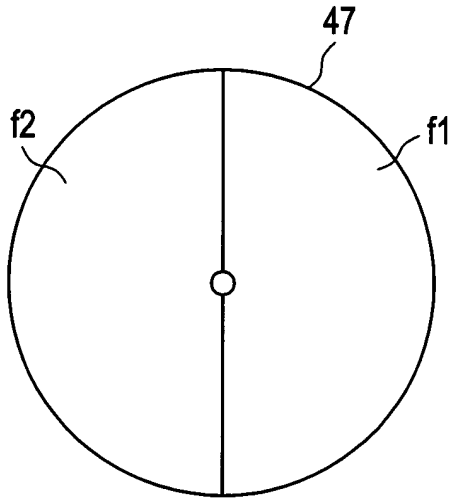


FIG. 32

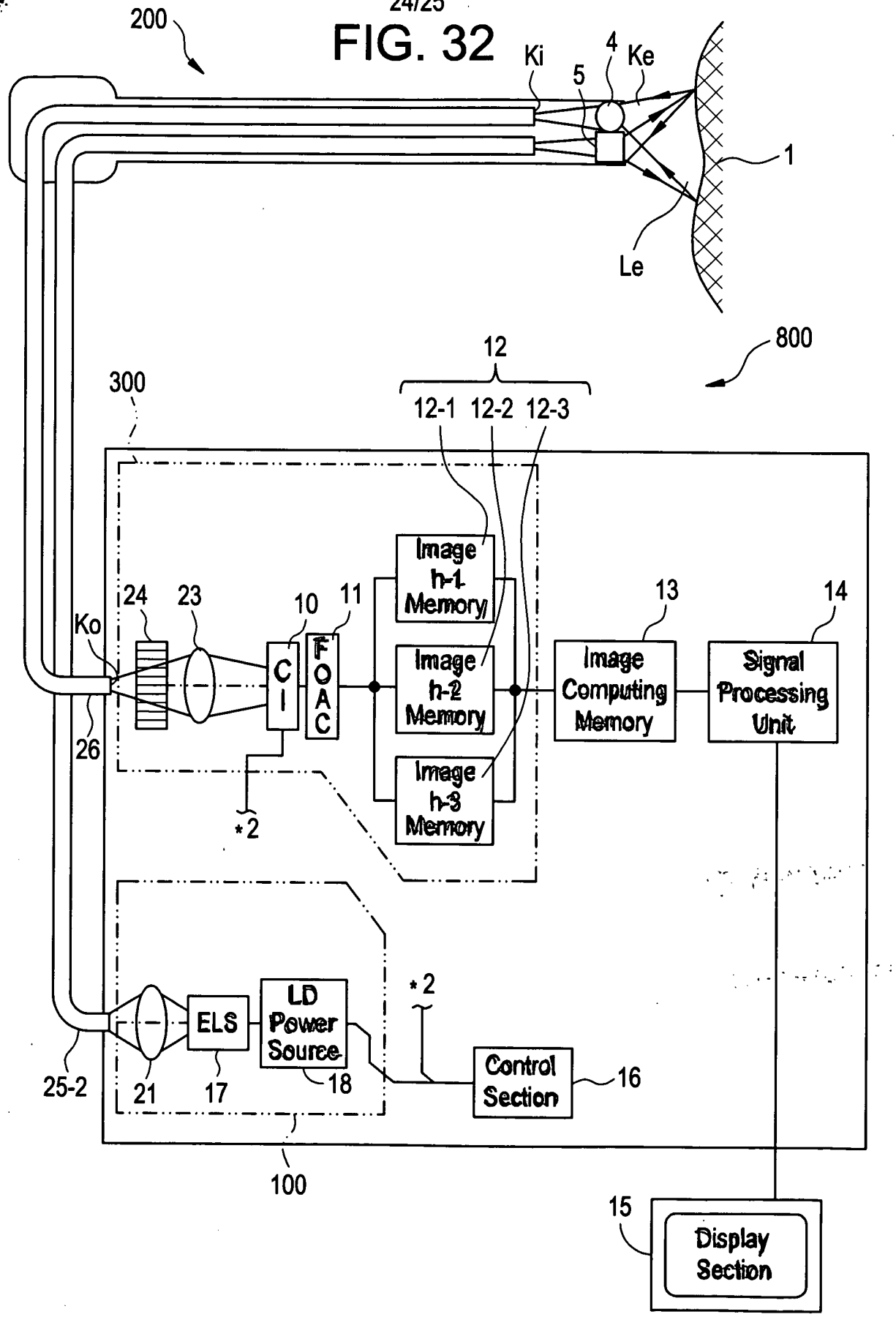


FIG. 33